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PINEY BRANCH (D. C.) QUARRY WORKSHOP AND ITS IMPLEMENTS.[1]

BY THOMAS WILSON.[2]

Prof. W. H. Holmes, one of our most accomplished and versatile members, on Nov. 16, 1889, read before our Society an extended report of his investigations in the quartzite boulder quarry at Piney Branch, which was published in the American Anthropologist, January, 1890, pp. 1–26, and is being reprinted in the 15th Annual Rep., Bur. Ethnology. The work described consisted of an excavation up the face of the hill near Piney Branch, in the form of trenches, one 75 feet long and some places 10 feet deep, and other shorter but similar trenches and soundings in the same neighborhood. At the conclusion of his paper, I stood up and complimented him upon the character of the work, and saying that heretofore speculation and theory in the office and with pen and ink, had been employed, instead of actual excavation in the field with the pick and shovel. I congratulated him and the Society upon the new era inaugurated. I said the fact that I did not agree to his conclusions had naught to do with this question and did not prevent me from rendering to him the credit for his new mode of investigation, it being the same I had chiefly pursued during my residence in Europe.

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[1] Read before the Anthropological Society, Tuesday Evening, December 4, 1894.

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Synopsis of the points made in opposition to Mr. Holmes' theories.

1. I concede that Mr. Holmes made a faithful and correct report of his excavations at Piney Branch and of the objects he found there, and I take no exceptions to that part of his paper.

2. But I except to his conclusions. I propose to show that his conclusions are erroneous and that the pretended facts (outside the quarry), on which he based these conclusions, are not facts but assumptions.

3. I propose to show that the objects which he calls "shop-refuse" and which as such should only be found in quarries and on shop-sites, have been equally wide-spread as are the finished implements which he declares to have been the sole aim of the workman in opening the quarry.

4. I propose to show the leaf-shaped implements which he calls "blanks" and which he says were merely material prepared at the quarry for convenience of transportation and to be worked into implements, were themselves finished implements, well-known and commonly used throughout the world in prehistoric times for spears, knives, daggers, etc., with and without handles; and sometimes put to secondary uses, as all other implements might be when broken or the need for their use had passed.

5. I propose to examine the aboriginal village-sites of the District and its neighborhood, in search of the leaf-shaped blades or "blanks" which Mr. Holmes so confidently asserts were carried from the quarry to "other fields" and for other "destinies," and I will show that the number treated as he says, was insignificant when compared with the material procured and the work done.

6. I propose to show the number of caches in the neighborhood to be insignificant; then, that the number of leaf-shaped blades, "blanks," *not in caches,* was also insignificant; then, that those of quartzite which alone could have come from Piney

Branch quarry, are still more insignificant in number, and, finally, that the number of finished implements, such as arrow- and spear-heads, scarpers perforators, etc., *of quartzite* which alone could have been made from Mr. Holmes' "blanks," is even less than insignificant when compared with the mass of implements made of quartz, felsite, argillite, chert, other material than quartzite.

7. I propose to show that, while his facts are assumptions, (always excepting the excavation) he has committed the double error of deducing a wrong conclusion from them, and I will show not only that the leaf-shaped blades (his blanks)—and along with them his finished implements, were not only *not made* from the "double turtle-back," but that they could not be made from it; and that Mr. Holmes' elaborate theory of manufacture as shown by his arranged series of "single turtle-backs," "double turtle-backs," leaf-shaped blades (blanks) and finished implements, being made one after another, each out of the one preceding, will break in two in the middle, because he cannot make the leaf-shaped blades (blanks) out of the double turtle-back without first practically reducing it to its original condition of an unworked pebble.

8. I will contend that the objects found in the quarry should be admitted in evidence and compared with other similar implements in the determination of their age. If this is not done and we are confined for evidence of age, to the quarry and its surroundings, under the assertion that it belonged to modern Indians, then I will attack its antiquity and attempt to show that it may be even more modern than the Indian, and that the quarry might all have been made while digging boulders with which to pave Pennsylvania Avenue in early times. I do not assert this to be true, but if we are deprived of the evidence of the worked implements and driven to surface indications, I will contend that there is evidence (1) of the trench having been entirely filled and carefully levelled so that the contour of the hill shows no trace of excavation which would not have been done by the Indian; (2) that the only other indications of age are the depth of soil on the surface and the size of the trees growing thereon, both of which might have

been accomplished since the laying out of the city of Washington.

9. I make further objection to Mr. Holmes' theory that it assumes jurisdiction of all questions, controverted or not, concerning the age of the quarry, and decides them in such manner as to preclude all further examination. If his theory that the quarry was opened and worked and the implements made by the modern Indian be correct then his decision closes the investigation and passes a final judgment from which there is no appeal.

I.

A portion of the interested public seem to be of the opinion that Mr. Holmes' excavation at Piney Branch was a severe blow to the possibility of a Paleolithic Period in the United States, if it did not destroy that theory altogether. I was not shaken in my faith. My judgment and, I may say without egotism, my years of study of the subject, have given me such an understanding of it as that the excavation at Piney Branch has not caused me to reverse my opinion. If Paleolithic Man existed in America, the traces will be found elsewhere, and a final adverse decision cannot be made upon evidence from a single locality. Therefore I could bide my time.

If the excavation at Piney Branch belonged really to prehistoric times, it is equally favorable to a Paleolithic Period as against it. The investigation reveals nothing incompatible with that theory. The conclusions of Mr. Holmes as announced in his paper were opposed to this, but conclusions are not facts, and renowned investigators have been known to discover many facts, all true, on which they based conclusions which were all error. There are some things in Mr. Holmes' paper not facts but conclusions stated as though they were facts, from which I entirely dissent. Some of these, I propose to examine. In this paper, the facts of discovery, as stated by Mr. Holmes, will be admitted; the errors of argument, theory and conclusion will be combatted.

Prof. Holmes' first five pages (Amer. Anthrop. IV. Jan., 1890.) are employed with the history of the locality; pp. 5 to 9 are filled with a description of the work done and the method of doing it; at the foot of page 9 commences his description of the art-product. As Mr. Holmes proceeds in his paper with the classification and study of these implements, he announces a primary distinction between those which bear evidence of design and those which do not—p. 11. Every archæologist knows of this as a prime necessity. Every one tries to keep to this distinction. The difficulty is in doing it.

True advancement in science depends on the correctness of the conclusion. To rightly decide this, decides the whole question, not only in this, but in almost every case concerning prehistoric man. Mr. Holmes has no difficulty in this regard. He has supreme confidence in his own ability and admits no possibility of mistake or error. He says same paper, (ibid.) p. 11, "With these distinctions (of design) in mind, the archæologist has but little trouble in recognizing and separating all classes of products and the *uninitiated* with a little careful study may readily learn to do the same. Having handled the products of this shop constantly for a period of several weeks, I have familiarized myself with every variety of form and shade of contour, and *do not feel the least hesitation* in presenting the results of my selection and classification." He then describes his Plate IV, (my Plate XIX), in which "is presented a series of worked stones from this site, which represents every variety of product and epitomizes the entire range of form. Beginning with the boulder *a* from which two chips have been taken, we pass through successive degrees of elaboration, reaching final forms in *k*, *l*, *m*, long leaf-shaped blades. * * If it be asked how I know this series is complete * * the discarded remnants tell the story, * * if every entire flaked tool had been taken from the spot, the record would remain with a certainty that is absolute."

He describes, *seriatim*, the manufacture through the first two stages, and he showed practically before the audience the two processes employed, which consisted of the simple operation of "grasping a boulder in either hand, strike the edge of one against the other so as to detach a flake, then a second and third until the circuit (of the pebble) is completed as shown in *a* to *d* and *n*, Plate IV, thus making a typical turtle-back."

(Fig. 1). The stone was turned in the hand and a second series of blows given on the other side, and the result was a "double-turtle-back," (Fig. 2). The third stage is described in an uncertain and indefinite way, rather out of keeping with the rest of the paper. "If the form (of the first-two stages) developed properly, the work was continued into what I have called, for convenience, the third stage. It consisted in going over both sides a second and perhaps a third time, securing, by the use of small hammers and by deft and careful blows upon the edges, a rude but symmetrical blade. A profile is given at *p.* in Plate IV." It is to be remarked, as a matter of importance, that his manipulations are confined to the first two stages and do not enter upon or pretend to show the third process which reduces the object from a thick and rude implement into "a straight and symmetrical blade less than one-half inch in thickness." There his process fails, and he has not, nor do I believe he

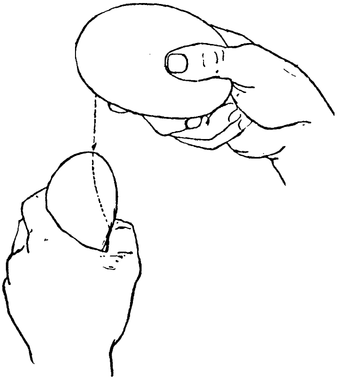


Fig. 1.
Free-hand on direct percussion; first step in shaping an implement from a bowlder. (Prof. Holmes fig. 6).

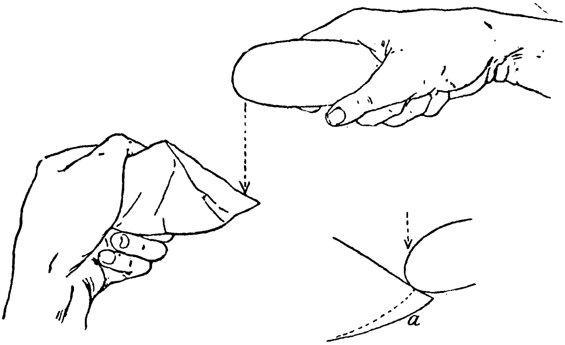


Fig. 2.
Direct percussion; manner of Striking where the edge is sharp. (Prof. Holmes fig. 7).

can, by any such process as he has indicated, make out of either his first or second stages, the leaf-shaped implement of the third stage. (I will refer to this later).

His notes on Plate IV are descriptive of the processes and products, and in this he speaks with the air of a master, describing with particularity the intentions and desires of the aboriginal maker, telling wherein he was unsuccessful and specifying the causes of rejection.

First stage—one side worked.

"*a.* Boulder with two flakes removed.

b, c, d. Specimen worked on one side only and had *probably been rejected on account of perverse fracture or excessive thickness.*

Second stage—both sides worked.

e. A few flakes removed from the back; *fracture perverse.*

f, g. Carefully worked on both sides, but still excessively thick, *hence the rejection.*

h. Broken by a stroke *intended to remove a prominent hump.*

Third stage—both sides worked.

i. Neat in shape, but with a ridge or hump on the back which *many strokes have failed to remove.*

j. Unsymmetric broken blade.

k, l, m. Thin, neat, broken blades. * * The last specimen of the series, *m*, is, perhaps, *the most advanced form found*, but that *it was not finished* is clear. * * It is highly improbable that we have in the whole series of products of the quarry, here epitomized, *any finished tool,* either whole or represented by fragments. This should *not be regarded as an opinion only; it is a conclusion based upon evidence that cannot be lightly treated* by the scientific investigator."

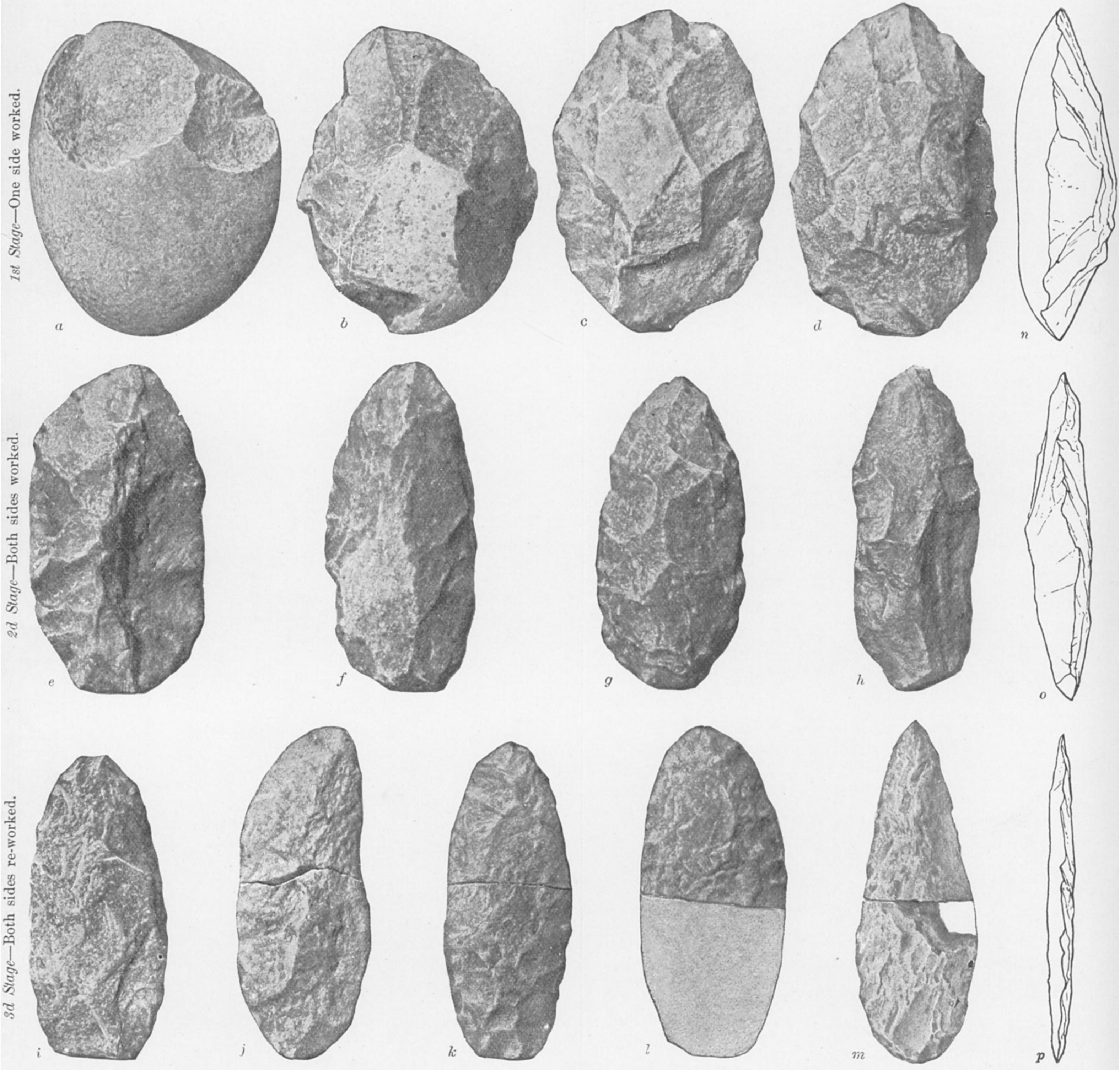
This is sufficiently positive to admit of no mistake as to the meaning of the writer. It is an *ex cathedra* opinion. It is the conclusion of one who knows, and who knows that he knows. It is the "Thus Saith the Lord" of holy writ. It is the *ipse dixit* of one who speaks by authority rather than the opinion of one who is making his first essay in his new appointment as Archæologist. This short sentence decides off-hand the

the whole question at issue, for it has been my contention that implements such as were described by Mr. Holmes have been found in many parts of the United States and nearly all over Europe, and have in the latter country always been treated as finished implements belonging to the Paleolithic period; and I respectfully submit that my side of the case is not to be overturned by a declaration made with whatever loudness or clamor, or with whatever positiveness and determination, and which, while declared as a fact, is naught but an assertion.

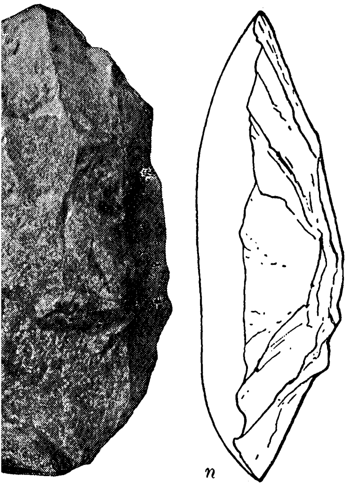
After having described the manufacture, closing with the third process, the making of the leaf-shaped implements, he says, page 13, "Having followed the process to the end, I wish to call *especial attention to the fact,* if my theory be correct, that when this thin blade was realized, the work of this shop and *the only work of this shop was ended.*" I ask—What right has Mr. Holmes to make this statement? What evidence is there of it? How can he know its truth? How can he know that the "turtle-back" may not have been intentional on the part of the workman, as well as the leaf-shaped blade? How can he know aught about the intention of the workman except, as can every other person, from the implements themselves and the condition in which they are found and the objects with which they are associated? Continuing, "The process and the machinery had accomplished all that was asked of them and all that they were capable of accomplishing."

What evidence of truth have we in these assertions? Again, "the neat, but withal rude blades, and they only, *were carried away and to destinies which we may yet reveal,*" p. 13. Who knows what blades were carried away, and what blades *only* were carried away? Is this not an unwarranted assumption? "Further work, additional shaping, employed other processes, and *was carried on in other fields.*" Why? How? In what fields? What further work? What additional shaping? What processes? Where carried? And who knows aught about it? If the writer of these statements had been himself a first-cousin of the paleolithic man and personally present with his kinsman at the close of the Glacial epoch, making notes and sketches of the quarry workshop of Piney Branch,

PLATE XIX.


1st Stage—One side worked.
a
b
c
d
n
2d Stage—Both sides worked.
e
f
g
h
o
3d Stage—Both sides re-worked.
i
j
k
l
m
p

Series of worked objects from Piney Branch quarry, beginning with the bowlder and ending with the leaf-shaped blade, according to Mr. Holmes PLATE IV.



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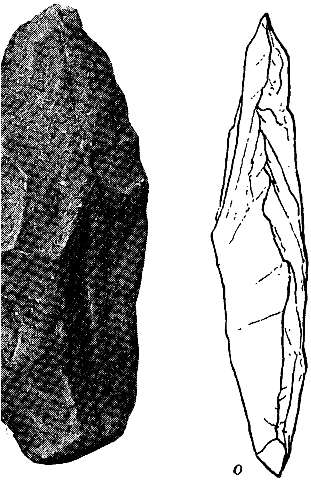

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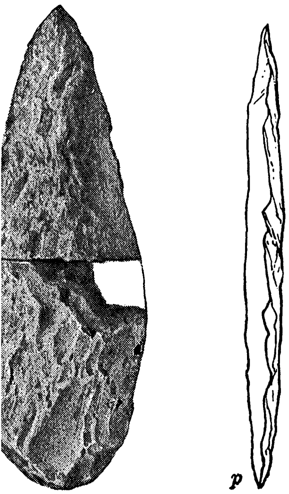
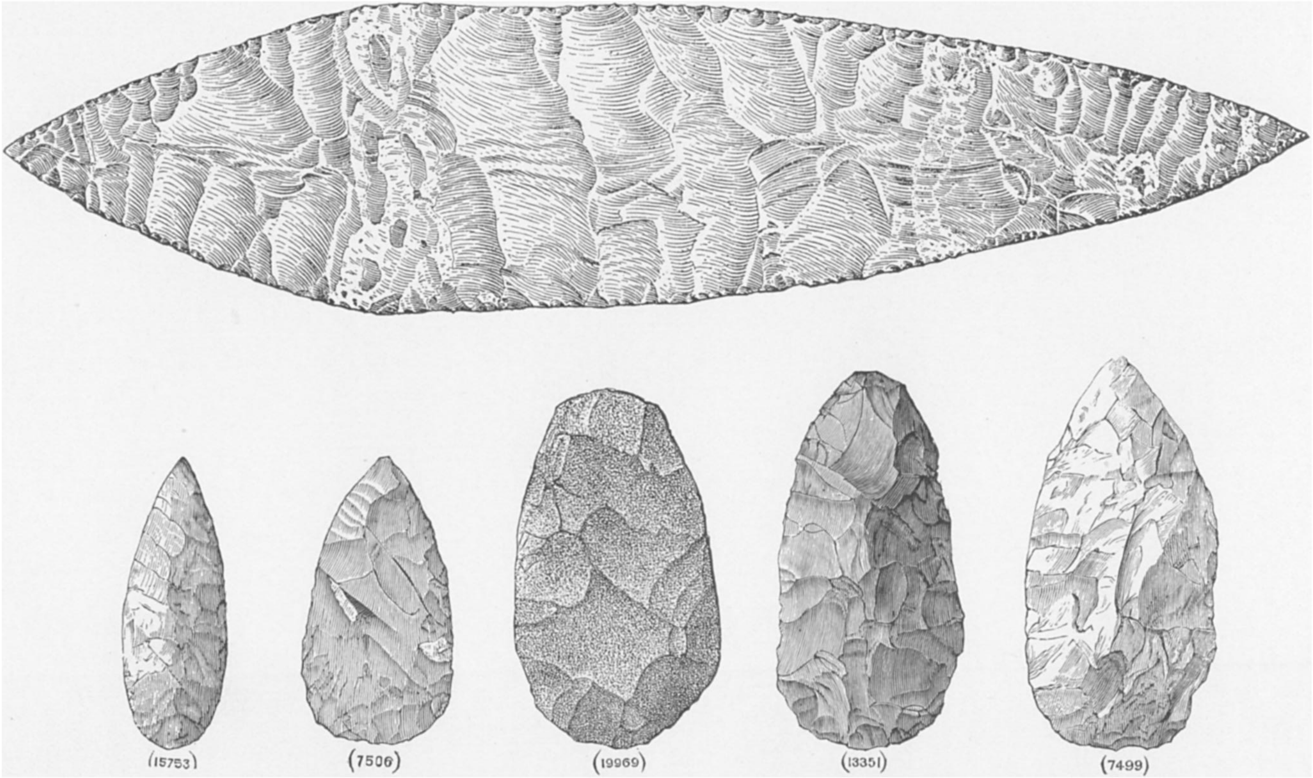


p

leaf-shaped blade,

PLATE XX.



Leaf-shaped implements, half size. The upper one from France, the lower ones from the United States.

he could not have spoken with greater positiveness and more certainty of knowledge. One might almost be pardoned, if he continued the reading to the foot of page 13, for believing that the writer considered himself not only omniscient but omnipresent. For he says, "That every implement resembling the final form, made from a boulder or similar bit of rock, must pass through the same, or much the same stages of development just described, whether shaped to-day, yesterday or a million years ago, whether in the hands of the civilized, the barbarian or the savage man."

I envy Mr. Holmes his confidence in his acquaintance with the times and men of high antiquity. Such intimate acquaintance with abstruse and unknown problems is equalled only by Dr. Jock Hornbook's acquaintance with medicine and knowledge of drugs; and he repeats this assumption when he says, "There were no examples of successful quarry-products left upon the ground, all forms available for further shaping or for immediate use *were carried away*, being the *entire products of the shop*, and the *only reward* for the long-continued and arduous labor involved in their production."

In the same strain, in the next paragraph, p. 14, he urges us to keep these facts clearly in mind and then says "it is almost superfluous to expend words in showing that all forms found in the workshop other than the thin blade, accidentally lost, are mere waste," and he declares with a heroic "pang of regret" that he is compelled to drop the turtle-back, single or double, wholly and forever from the category of implements and to consign it to the oblivion of "failures." And, as if to make an end to the discussion and settle the question forever, he, in the next sentence, extends his denunciation to all similar forms throughout the Potomac Valley. We should "cast them at once and without hesitation into the refuse."

In the same manner, and with similar sentences, he settles and decides in an off-hand manner, as though it rested upon some great and well-known law and well demonstrated evidence, the very question at issue, and considers that his discovery has put it beyond the pale of intelligent discussion.

"All forms found in the workshop other than the thin blades accidentally lost are *mere waste;* * * * this spot is a great workshop where tools were shaped or rather roughed out, and *these things are the failures.*" P. 14.

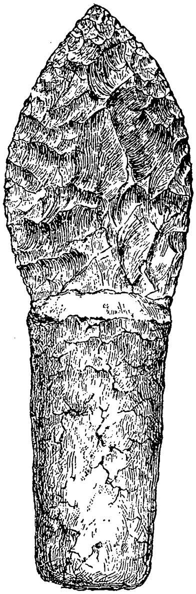
This is the precise question, decided so dogmatically and with such an *ex cathedra* opinion, which is the point of the discussion; for it has been contended by those who believe in the probability of a paleolithic period in America, that whatever these implements were, they were not failures, not waste or debris, but were intentionally made, and whether they were or were not implements of the paleolithic man, they correspond in a remarkable degree with undoubted paleolithic implements found in nearly every country of Europe.

Mr. Holmes admits, p. 17, "that to a limited extent (he might well have said unlimited) the rude forms—the turtle-back and its near relatives—*are also found scattered over the Potomac Valley outside the shop on the hills.*" He might have added that they were to be found practically all over the United States. I propose to show that they are even more plentifully scattered over the surface of the hills and fields in the neighborhood of Mt. Vernon than around Washington. "This (the above) would seem to conflict with my former statement that all these are failures and were left upon the factory sites," and he adds "It is time therefore, that I should define a stone-age workshop." Mark the adroitness with which he confines the implements within a workshop and yet accounts for their general dispersion throughout the country. He accomplishes it by defining a workshop to extend all over the country. "It (a workshop) is any spot where an individual desiring to make an implement, picks up one or more boulders or bits of stone, proceeds to shape what he desires.

His definition of a workshop is on a par with his other argument. This definition leads him into reasoning in a circle: (1) all turtle-backs are the failures of the workman; (2) this is proved by all the failures being left in the workshops as debris; (3) wherever you find a turtle-back was made, there was a workshop; (4) wherever you find it in a workshop, it was left among the debris. Can any process of reasoning be more vicious than this? "There is so far no evidence that any inhabitant of the Potomac Valley ever aimed to make by flaking alone any other than the attenuated form," p. 17. "This process leads inevitably to the production of blades *in numbers*, and the supply for the entire year was to be obtained probably within a small fraction of a year, the working period being determined by the season, by tribal movements, or by the limitations of time."

Mr. Holmes disposes these leaf-shaped implements by declaring them (p. 18) to have "been roughed out in numbers to a stage of advancement that made them portable, and at the same time brought them within reach of the processes which he employed in finishing, that they were carried away to the villages and buried in damp earth (cached) until the time came for flaking them into the final forms required by the art. * * * This history of these quarry forms is to be completed by their final distribution among the inhabitants of the various tribes, where we have witnessed the final step in the shaping process —the shaping out of specific forms with a bone tool—and their final adaptation to use and dispersal over the country."

I scarcely know what answer to make to all this. It is so complete and perfect an assumption that one scarcely knows how to make a rational argument against it. I shall refer later to, and show the error of fact contained in this assumption. These leaf-shaped forms have been found in every age of the prehistoric man, in almost every country in the world, they have been of every size—from 16 inches in length down to $\frac{3}{4}$ of an inch. Pl. XX. They are made with all degree of fineness, have preserved their general form and characteristics, and we may imagine in a general way the use for which they were intended. They may have been used as arrow or spear-heads, or they may have been inserted in a shaft or handle and used as spears, or by shortening the handle, as knives; (figs. 3, 4) or they may have been wrapped with hide, bark or grass and this served as a handle (fig. 5). But that they were completed implements ready for whatever use they might have been intended, no prehistoric archæologist of whom I have any knowledge has ever doubted. A duplication and extension of the uses of nearly every implement may be attributed to the prehistoric man as has been done by the civilized man. No one can prescribe the limits within which a sailor's sheath knife may not be used. A hollow-handled awl is sold in our stores to-day for 50 cents representing itself to be an entire set of tools. The same duplication, changing of purpose and adaptation to other purposes, may not have been impossible with the prehistoric man in his employment of these leaf-shaped implements, but that all the leaf-shaped implements, the products of this quarry, and by consequence, all others, should have been but prepared material, wrought from the pebble, to be carried to the home of the man who made them, to be flaked into some unknown and unsuspected implement and then peddled over the country, is an assumption which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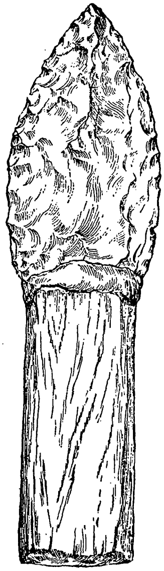
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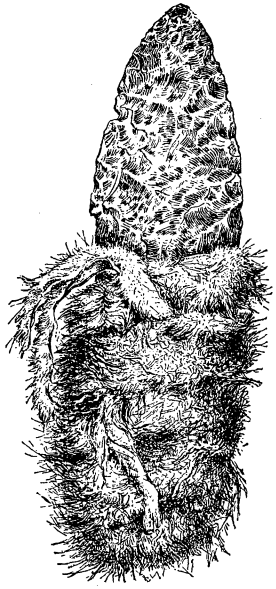
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Figs. 3, 4. Leaf-shaped implements of jasper, chipped to shape, fastened in wooden handles with pitch or bitumen—to be used as knives, from the Pacific Coast, half size.

Fig. 5. Leaf-shaped blade, chipped, of mattled absidian, wrapped in other skin, used for knife. Collected by Capt. P. A. Ray, from Hoopa Valley, Cal., half size.

has so little foundation as to weaken rather than strengthen his argument. It is only referred to as being on the level with the rest of the paper and to show what a large proportion of it is assumption, and how slight is its foundation of fact.

The method of determining the kind and use of implements, their mode of manufacture and the expected benefit which induced the prehistoric man to expend himself upon them, by comparing him with ourselves, with putting him in our places, or putting ourselves with our knowledge and skill, culture and spirit of invention, in his place, and then deciding everything he did from our standpoint, is one of the errors of modern archeologists and one which leads them far from the right path. This discussion leads Mr. Holmes into the processes of the manufacture of flaked stone tools, and he explains direct or free-hand percussion, declares its limitation, how it was the only method known in early times, and throughout pages 15 and 16, explains the details, giving philosophic dissertations upon the art of stone flaking or chipping and, of the development of the spirit and technology of art required in this work of making leaf-shaped blades. No better answer could be given to this theory than the exhibition of the finely flaked flint implements all prehistoric, coming, some of them, from Scandinavia, Mexico, and a large number belonging to the paleolithic period, found throughout the interior of France in what M. de Mortillet calls the "Solutrèen epoch," M. Reinach and others, the "Cavern epoch." Yet Mr. Holmes has never been able to reproduce one of them or to overcome the difficulties of their fabrication.

(*To be Continued.*)